Space Weather Forecast

Issued on Monday, 20 June 2022 at 13:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily chance of an isolated moderate-class X-ray flare.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with occasional common class X-ray flares, the largest of which came from a region that is moderately large and active, near the central meridian in the north. There has also been flare activity from two regions near the northwest and southwest limb. There are presently 3 other regions on the disc, in the western hemisphere, but these remained simple and stable during the period.
No Earth directed Coronal Mass Ejections (CME)s were observed in the available imagery during the period. However, there is a large filament (arc of plasma) in the northwest quadrant which is being closely monitored for movement.

Solar Wind / Geomagnetic Activity: The solar wind has been elevated over the past 24 hours with speeds erratically declining from around 600 km/s to around 520 Km/s. The total magnetic field was generally weak, but rose to moderate 20/0720-0915 UTC, however the important north-south component continued to only fluctuate weakly. Resultant geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The high energy proton flux remained at background, with no solar radiation storms observed in the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low, with a daily chance of an isolated moderate-class flare and a slight chance of a strong flare.

Solar Wind / Geomagnetic Activity: No CMEs feature in the forecast. Elevated solar winds are expected to continue their decline on day 1 (20th), but may become elevated or perhaps strong again on Day 2 (21st) under the influence of a small coronal hole, followed by another slow decline on Days 3 and 4 (22nd and 23rd). Geomagnetic activity should reduce from Quiet to Unsettled levels to mainly Quiet. However, there is a chance of Active intervals on days 1 and 2 (20th and 21st) and slight chance of a G1/Minor storm on Day 2 (21st).

Energetic Particles / Solar Radiation: Solar radiation storms are not likely in the period and proton flux should remain at background levels. However, there is a daily slight chance of an S1 or greater event occurring, due to the presence of a couple of relatively large and complex sunspot regions on the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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